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ABSTRACT

Readability formulas have varied uses. In education they are used to match children's reading ability to the difficulty level of material, select stories and books for classroom use and for individual students' particular needs, select textbooks and other reading materials, aid educational research, and check reading materials of newly literate adults. In business, readability formulas are used by manufacturers concerned with safety, product liability, and proper use; by companies and banks concerned with the difficulty of their consumer publications; and by companies concerned with advertising effectiveness. Readability formulas are used in court cases, such as those involving Medicare and the readability of product labels. Governmental concerns with readability involve Plain Language Laws that affect consumer oriented contracts, federal government publications, military publications, and drivers license manuals. Readability formulas are also used heavily by the publishers of elementary and high school level textbooks, and by newspapers, resulting in the change of the readability level of front page stories from grade 16 to the present level of grade 11. In conclusion, readability has helped every literate person as well as those about to become literate. (EL)

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THE VARIED USES OF READABILITY MEASUREMENT

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Paper prepared for the Symposium Assessing Readability: Classic and New Approaches organized by Jeanne S. Chall at the IRA Annual Meeting, April 1986

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Readability has always had an important position in the field of reading and in this organization in particular. Here are a couple of quotations from Jerrold's history of the International Reading Association.

> On a very hot summer afternoon in 1947 at Temple University in Philadelphia, six people gathered informally and began talking about forming an organization of persons in the area of reading instruction. Being concerned with the entire field of reading instruction, the Temple group concluded that its needs could be advanced most speedily and efficiently through an organization. Emmett A. Betts paid 36 cents for six bottles of cola for that little group.

Some months later at the International Council for the Improvement of Reading Instruction (ICIRI)

> Acting Chairperson Yourman reconvened the new organization on November 22, 1947, and at that meeting a constitution was adopted. As defined in the first constitution, the purposes of the new organization were rather ambitious and broad. The purposes were stated as follows:
>
> 1. To stimulate and enocurage research in
>   a. developmental, corrective, and remedial instruction in reading;
>   b. the diagnosis of disabilities in reading;
>   c. readability; and
>   d. the improvement of textbook construction and publication from the point of view of the reading problems therein and of their effect on reading instruction.
> 2. To publish results of pertinent, significant investigation and experimentation to the end that general practices in reading instruction be improved.

Incidentally in 1955 the ICIRI helds its last meeting as a separate organization then joined the National Association of Remedial Teachers (NART) to form the present IRA.

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Just as the founders of IRA had no vision of how large the IRA would become they would perhaps be genuinely surprised at the growth in the use of readability measures which was one of their charter goals.

Educational Uses

Educators have been on the forefront of users of readability formulas. The first formula was probably the one reported by Lively and Pressey in 1923 but none other than William S. Gray the first president of the IRA published a book What Makes a Book Readable in 1935. Since then Klare (1984) estimated that there have been over 1000 articles on readability formulas, many of them describing uses at various levels and in different setting.

The reason educators use readability formulas is that by properly matching the child's reading ability to the difficulty level of the material you can cut down on oral reading errors and increase silent reading comprehension. You can also increase the time a student will continue to read and increase the number of blanks the student can fill in on a cloze test. But this is not a paper on why formulas are good, it is a paper on where formulas are being used.

They are being used in schools and classrooms all over the world. They are being used by teachers interested in selecting stories and books for classroom use and for individual students particular needs. They are being used by the school librarians in making book purchases. They are being used by textbook selection committees. At the state level, David Cody of the National Association of State School Boards found in a recent survey that 17 of the 22 states that have state adoptions have readability

formulas scores on books considered for adoption, though he felt that they were being used less than formerly.

School librarians have a reference work called the Elementary School Library Collection (Brodart) which lists a readability formula score, Spache below grade 3 and Fry above, for most books found in school libraries.

Another large reference work published by the College Entrance Examination Board lists readability scores in DRP (Degrees of Reading Power) units based on the Bormouth formula for thousands of school textbooks. These DRP readability units are matched by a DRP test and this test is widely used in New York State and a few other areas.

It is difficult to get objective data on how widely readability formulas are used by educators. I see a large number of teacher training college textbooks in the reading field since I teach in that area and I would estimate that approximately half of all the beginning reading methods textbooks contain a readability formula and another quarter would have at least some discussion on the topic of readability. Roger Farr, a former IRA president has been publicly cited as estimating that 40% of the state and local school districts use readability formulas as one criterion in textbook selection (Bridgmen, 1984). It is a rare textbook salesman today who cannot tell you the readability of the EL/Hi book he or she is selling. For example, Readers Digest Educational Materials have the Dale Chall, Spache and Fry formula scores printed in their catalogue descriptions.

Another prominent use of readability formulas is in educational research. The Social Science Citation Index shows that readability

formula articles are among the most frequently cited articles of all types of educational research. They provide one measure of objective control on the difficulty of passages used in many kinds of experiments.

Readability formulas are rapidly spreading around the world, publications of the IRA regularly carry articles of international use. Readability is alive and well in the United Kingdom, Australia, Sweden, Latin America and Korea to name but a few places.

Persons and organizations interested in adult literacy are another source of users. For example the Laubach Literacy Organization has an instructors manual that contains a readability formula and formulas are used to check on the reading materials for newly literate adults. Incidentally, Rudolph Flesch originally worked in adult education when he designed his formula.

Business Uses

There is serious interest on the part of many manufacturers who have concerns related to safety, product liability and proper use. Frequently one of the key methods of communication between the manufacturer and the consumer is in the form of a booklet or label. For example the Electronics Industries Association which produces TV's, stereos, home computers and VCR's formed a Consumers Electornics Group which advocated a number of procedures including a recommendation that there be "one or several procedures for testing the booklets to find out whether they are readable . . . (Simply Stated, October 1985).

The insurance industry is also a prominent user of readability formulas. As of March 1984, 28 states require that personal auto and home owners policies must have a Flesch REading Ease Score between 40

and 50 or about 10th grade (U.S. Department of Commerce, 1984). A Plain Talk Car Insurance policy issued by Sentry has been approved in 44 states.

The American Council of Life Insurance reported that in 1975, 43% of life insurance purchasers reported difficulty in reading their policies. In 1982 after hundreds of companies had issued simplified policies only 33% had reading difficulties.

Some banks have also taken leadership in simplifying forms and documents that consumers must use. Citibank in New York, one of the nation's largest began simplifying such things as notes in 1973 using its own staff and consultants such as Rudolph Flesch. There were grave fears on the part of some attorneys and loan managers that such simplification and untested (in court) language could result in losses from failure to collect debts. Contrary to their fears within a few years "Citibank considerably reduced the number of suits it brought against consumers" (U.S. Department of Commerce, 1984).

The J. C. Penney Company has consumer guides available in over 700 stores and through its catalogue division. These guides cover such subjects as drapery fabrics, microwave ovens, and home insulation. They are written at the 8th grade level. When the company surveyed 300 sales personnel they responded that 70% had seen a customer come back and make a purchase after being given a guide and 80% felt that guides helped give the customers confidence to make a purchase.

Readability also plays a prominent part in judging the effectiveness of advertising. For example the Pfizer drug company publishes a good will general audience magazine called American Health with a circulation of

350,000 and the company employs the Flesch scale to determine its readability. Pfizer alsc has informational newspaper and magazine advertisements on general health information and it specifies an 8th grade readability level for these. Their effectiveness is partly determined by a readers poll. Yankelovich, Skelly and White found that before reading an ad on heart condition and medication, 49% of the respondents could answer a key question correctly and after reading 86% answered correctly.

The Magnuson-Moss Consumer Product Warranty Act of 1975 specifies that warranties must be written in "simple and readily understood language." This act is administered by the Federal Trade Commission (FTC).

The National Association of Home Builders comprising some 100,000 members has added a self regulatory Home Owners Warranty which is written in plain English. This not only makes it easier for the ocnsumers to understand what kind of protection they are getting but these plainer warrantees make it easier for the American Arbitration Association to settle disputes.

Other business uses of readability formulas include their use on CPA accounting standards, computer programs and customer information in nearly every industry in the nation. General Motors showed a lead in this direction by publishing its own version for the Flesch scale in 1948 and in having a reading specialist on the staff of its own training institute.

Court Cases

Readability is directly involved in a number of court cases and is rapidly building up a number of precedents. For example in a class action suit involving Medicare appeals much of the contention involved the

readability of a form letter sent out by the New York Medicare office. The background of the situation perhaps comes from a common misunderstanding that Medicare will pay a high percentage of your hospital bills once you reach the age of 65. The facts are quite different, Medicare only pays something approaching half. This understandably results in thousands of requests for review and/or appeal. The class action suit was instituted because the claimants held that they are not properly informed of their appeal rights. Indeed I testified that the letter was written at a 16th grade level and furthermore had a confusing format. This was matched with the demographic that the average Medicare recipient in New York had an 8th grade education. Judge Weinstein of the U.S. District Court, Eastern District of New York, ordered Margaret Heckler, Secretary of Health and Human Services to revise the appeals letter and in effect the government lost the case.

Another case testified involved product liability of a manufacturer of drain cleaner. It seems that a man incorrectly combined two types of drain cleaning chemicals, they blew up into his face and he was blinded. The blinded man claimed that the directions were not clear. A readability formula showed that the directions were written at the 8th grade level of difficulty and that before being blinded the man had subscribed to Time magazine which has a readability of 10 to 12th and furthermore that the man had a 12th grade education.

A current case involves A. H. Robins drug company that manufactures an interuterine contraceptive device and a large nubmer of women who have damage claims against the company. U.S. District Judge Robert Merhige found that the notice Robins was planning to use that informed the women

of a deadline for filing claims was not in plain English and that the notice was appropriate mainly for lawyers. Robins company agreed to revise the notice and promised to rewrite it at a 4th or 5th grade reading level.

Through these and other cases there is rapidly being built precedents for using readability measures as part of contested legal proceedings.

There have been numerous complaints about the readability of legal documents and a number of articles and books imploring lawyers to improve their writing. A good exmaple is Law Professor Robert Benson (1984-85) who wrote an article entitled "The End of Legalese: The Game is Over" that appeared in the NYU Review of Law and Social Change. Included in this is some information on jury instructions and information on how to use the Flesch and Fry readability formulas.

Governmental Uses

Beginning with New York in 1975 seven state governments* have passed Plain Language Laws which affect such consumer oriented contracts as rental agreements, money lending forms, and the fine print on insurance policies. For example, in part the New Jersey law states that: "A consumer contract shall be simple, clear, and understandable, and easily readable." In practice "easily readable" often means about 8th grade readability.

Though state bar associations (the lawyers) frequently opposed these laws, however ensuing experience has found that they have caused little legal difficulty or ambiguous wording disputes for the courts to settle.

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*Others are New Jersey, Hawaii, Connecticut, Minnesota, Maine and West Virginia.

Other evidence of governmental concern about readability ranges from Oklahoma, where their State Department of Education is requested to do readability analysis of all ballot propositions, to the federal government, where President Carter in 1978 issued an executive order to all departments in the Executive Branch to improve readability of their written communications. One result of that order is that the IRS has an in-house readability expert and they use outside consultants to check on the readability of some of their tax documents. Readability might help, but it can't simplify the complex maze of requirements and deductions imposed by Congressional action.

All the military services have done research on readability and they have even produced some excellent booklets on how to eliminate much military jargon, but it is pretty hard to teach some old unit commanders and Pentagon bureaucrats a new, more direct type of English. However, the Department of Defense does set readability levels for some contracted manuals.

In case you wonder why the military is interested in readability several illustrations will clearly show you. Klare (1984) states that a modern Navy F-14 fighter plane requires 260,000 pages of documentation. Two hundred and sixty thousand pages if stacked up would be over 10 stories high. Other sources state that the Navy currently uses 200,000 technical manuals and produces about 5000 new ones each year.

Stalm, Henk and King used the Raygor, Fry and Flesch formulas to study the Driver License manuals of all 50 states. You might be interested to learn that they vary from 6th grade level in Connecticut to the 15th grade leve in Nebraska with the mode at 10th grade.

Collin Harrison (1986) reports that a number of national bodies in the United Kingdom use readability formulas. These include the Department of Environment, the Department of Transportation, and the Law Commission. There is currently a strong movement going on in the Australian government and there is an active Canadian Law Information Council.

Publishing Industry Uses

I have already mentioned the heavy use of readability formulas by publishers of elementary and high school level books. Some critics of formulas see this as a negative factor and have given it such catch phrases as "the dumbing down of textbooks" (Bridgman, 1984). Staff members of the Center for the Study of Reading at the University of Illinois (Anderson et al., 1980) have also criticized the affect of formulas on textbooks. However most formula developers say over and over again that readability formulas are not writeability formulas, that is they do not proport to tell writers who to write. Writing instructors come in the form of checklists and writing manuals. They include much more information than simple sentence shortening and word shortening. To make documents more readable you need to have certain types of sentences, vocabulary selection which is based on reader's knowledge and/or commonness of words, proper subheads, and a host of other factors.

The critics complain that formulas are too simple. The formula makers reply "but they work - and in science simplicity is a virtue not a fault." Klare (1981) has pointed out that formuals are excellent predictors of comprehension and that they "correlate in the 80's or low 90's with comprehension. Furthermore "compared with other kinds of

psycho-educational prediction such as school grades, sales, or success on the job, readability formulas stand up very well indeed." I might add that reading tests on students do not predict achievement or the score on another reading test any better. Perhaps the critics of formulas can come up with something that will predict comprehension better or will be more universally accepted.

A prime example of the effect of readability formulas in publishing is their effect on newspapers. The American Publishers Institute states that "Flesch's work had a powerful impact." Wardlow 1985 / Flesch worked as a consultant to the Associated Press beginning in the late 1940's and reportedly brought front page stories from grade level 16 down to approximately grade level 11 where they remain today. APs competitor, the United Press International (UPI), used Robert Gunning as a consultant on readability and writing with similar results.

The American Press Institute trains about 1000 persons per year in one and two week seminars for all phases of newspaper work, their training, and somewhat wider circulated publications, include readability formulas.

Conclusion

I would say that Emmet Betts and the little group that founded the predecessor of this giant organization with readability as one of its four interest designations can be more than pleased. This paper has attempted to show the many varied uses of readability in business, industry, education, the government and publishing in both this country and with suggestions that it is moving worldwide. Perhaps part of readability's interest is that it still is a bit controversial and still unknown in many circles.

For those who wonder if educational research ever pays off - I would say readability is a real pay off. It has helped not just millions of students to get textbooks that they can read better, it has helped newspaper readers, insurance policy buyers, readers of consumer contracts, and buyers of new products. In short it has helped every literate person and those about to become literate.

Thank you Sidney Pressy, Emmet Betts, William Gray, Edgar Dale and all those they have inspired to work in this field.

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